

Christopher Clarke

UNIVERSITY OF MICHIGAN · UNIVERSITY OF GUYANA · V75 INC. · NEXUS HUB INC.

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Education

University of Michigan

PHD COMPUTER SCIENCE & ENGINEERING

Ann Arbor MI, USA

Sept 2019 - Dec 2024

- Advisor: Dr. Jason Mars
- Dissertation Title: Towards Enhanced Human-AI Interaction:
A Holistic Approach to Personalization in Natural Language Processing

University of Michigan

GRADUATE CERTIFICATE IN INNOVATION & ENTREPRENEURSHIP

Ann Arbor, MI, USA

Sept 2021 - Apr 2023

- GPA : 4.0

University of Michigan

MSC. COMPUTER SCIENCE & ENGINEERING

Ann Arbor, MI, USA

Sept 2019 - Apr 2021

- Specialization: Human-AI Interaction

University of Guyana

BSC. COMPUTER SCIENCE

Georgetown, Guyana

Sept 2015 - May 2017

- Undergrad thesis: *A Sentient approach to designing Smart Devices*

Professional Experience

Software Engineer, Jaseci Labs (Summer 2024)

- Lead Developer for Patent Drafting AI Agent for local Ann Arbor law firm resulting in 30% increase in productivity. Law firm is building a new startup around the technology.
- Lead Developer for Multi-modal GenAI tool used by large financial institution for vehicle damage assessment. Deployed in production using AWS SageMaker saving over \$1M annually in processing costs.
- Core Contributor to [Jaseci EcoSystem](#), an open-source framework for scalable AI development.
- Collaborated on state-of-the-art AI research on language level abstractions for GenAI. Co-author on paper *MTLLM: LLMs are Meaning-Typed Code Constructs*.

Research Scientist (Part-time), Microsoft (Winter 2024)

- Collaborated with ROAR (Responsible Open AI Research) team on content moderation tooling for Azure.
- Developed large scale benchmark and dataset for content moderation training and evaluation.
- Implemented Azure AML pipelines for handling large scale data and LLM training and evaluation.

Applied Scientist Intern, Amazon (Fall 2022)

- Conducted AI research with Alexa CAST Team working on Time-Aware Customer Action Prediction.
- Developed state-of-the-art temporal next action prediction model utilizing GNNs and transformers.

Research Intern, Microsoft (Summer 2022)

- Conducted AI research on rules-based deep learning with ROAR (Responsible Open AI Research) team at Microsoft Cloud+AI advised by Matt Hall and Mei Chen.
- Developed Rule By Example (RBE) a state-of-the-art rules-based deep learning framework for AI transparency and interpretability in the domain of content moderation outperforming SOA by up to 4%. Published at ACL 2023.

Lecturer I, University of Guyana (2021 - Present)

- Lecturer for courses Data Structures and Algorithms, Object Oriented Analysis Design and Development and Internet Computing I and II.
- Supervisor for final year undergraduate research projects.
- Core contributor to UoG M.Sc Artificial Intelligence curriculum (Approved by UoG Academic Board in 2024 for 2025 start).

Director, V75 Inc. (2019 - Present)

- Director of V75 Inc. a Guyana based Caribbean software development company specializing in AI and information system development.
- Lead and grew a team of 20+ software engineers to deliver high quality AI and IS solutions to local, regional and international clients across various industries. See v75inc.com for information on our projects.
- Chief Architect for V75 Inc. cloud and software infrastructure, overseeing the development of all software projects. I manage our cloud infrastructure, CI/CD pipelines, and development tools utilizing technologies such as AWS, Docker, Kubernetes, Oracle APEX and GitLab.

Director, Nexus Hub Inc. (2018 - Present)

- Co-Founder and Director of Nexus Hub Inc. a non-profit organization focused on developing the tech ecosystem in Guyana. I am responsible for the strategic and operational decisions of the organization ensuring that the organization meets its statutory obligations.
- Lead organizer of AI4D Conference, an annual event launched in 2023 aimed at showcasing practical AI applications for industry and development as well as inspiring meaningful discussions on AI adoption and strategy in developing nations like Guyana.
- Lead organizer of the DevX Event, Guyana's first digital industry event aimed at showcasing practical AI applications for industry and development as well as inspiring meaningful discussions on AI adoption and strategy in developing nations like Guyana.
- Lead Instructor and Developer of NexusU an IDB Lab funded industrial training program aimed at upskilling Guyanese.

Graduate Student Research Assistant, University of Michigan (2019 - 2024)

- Conducted cutting edge AI, HAI and NLP research advised by Prof Jason Mars in Clarity Lab at the University of Michigan.
- Obtained a Ph.D. in Computer Science Engineering with a focus on Human-AI Interaction and Natural Language Processing.

Research Consultant (Core AI Team), Clinc Inc. (via V75 Inc.) (2019 - 2020)

- Collaborated with Clinc Inc. Core AI Team on developing state-of-the-art conversational AI agents for large financial institutions.
- Co-author of Clinc-150 dataset, an evaluation dataset for Intent Classification and Out-of-Scope Prediction. Cited over 500+ times in NLP research.

Research Assistant, University of Michigan (2018 - 2019)

- Conducted collaborative research on conversational systems for autonomous driving with Ford Motor Company.

Instructor, University of Guyana (2017 - 2021)

- Lecturer for courses Data Structures and Algorithms, Object Oriented Analysis Design and Development and Internet Computing I and II.
- Supervisor for final year undergraduate research projects.

Webmaster, University of Guyana (2016 - 2018)

- I built and designed the entire web presence for all University of Guyana departments and faculties using Drupal. These websites are still in use today with over 100,000+ monthly visitors.

Teaching Assistant, University of Guyana (2016 - 2017)

- Teaching Assistant for courses Data Structures and Algorithms and Introduction to C Programming.

Software Engineer, Version75 Solutions (now V75 Inc.) (2015 - 2019)

- Software Engineer for Version75 Solutions, a Guyana based software development company specializing in information system and mobile application development.
- Developed and maintained software solutions for local, regional and international clients across various industries.

Information Technology Teacher, Jos-el Educational Institute (2013 - 2016)

- Taught Information Technology to students in grades 7-11.
- Developed and maintained the school's IT infrastructure.

Proficient in: Python, JavaScript, SQL, PHP, Jac, HTML, CSS, Drupal, WordPress, Git, Docker, Kubernetes, AWS, Azure, Oracle APEX, GitLab, JIRA, Confluence, Slack, Microsoft Office Suite, Google Suite, LaTeX, and more.

Publications & Patents

PUBLISHED

Jason Mars, Yiping Kang, Jayanaka L. Dantanarayana, Chandra Irugalbandara, Kugesan Sivasothyathan, **Christopher Clarke**, Baichuan Li, Lingjia Tang. 2024. MTLLM: LLMs are Meaning-Typed Code Constructs. arXiv preprint 2024 ([PDF](#), [Code](#))

Christopher Clarke, Yuzhao Heng, Lingjia Tang, Jason Mars. 2024. PEFT-U: Parameter-Efficient Fine-Tuning for User Personalization. arXiv preprint 2024 ([PDF](#), [Code](#))

Christopher Clarke, Roland Daynauth, Jason Mars, Charlene Wilkinson, and Hubert Devonish. 2024. GuyLingo: The Republic of Guyana Creole Corpora. In Proceedings of the 2024 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (Volume 2: Short Papers), pages 792–798, Mexico City, Mexico. Association for Computational Linguistics. ([PDF](#), [Code](#))

Christopher Clarke, Karthik Krishnamurthy, Walter Talamonti, Yiping Kang, Lingjia Tang, Jason Mars. 2024. One Agent Too Many: User Perspectives on Approaches to Multi-agent Conversational AI. arXiv preprint 2024 ([PDF](#), [Code](#))

Christopher Clarke, Matthew Hall, Gaurav Mittal, Ye Yu, Sandra Sajeev, Jason Mars and Mei Chen. 2023. Rule By Example: Harnessing Logical Rules for Explainable Hate Speech Detection. 61st Annual Meeting of the Association for Computational Linguistics: ACL 2023 ([PDF](#), [Code](#))

Christopher Clarke, Yuzhao Heng, Yiping Kang, Krisztian Flautner, Lingjia Tang and Jason Mars. 2023. Label Agnostic Pre-training for Zero-shot Text Classification. Findings of the Association for Computational Linguistics: ACL 2023 ([PDF](#), [Code](#))

Christopher Clarke, Joseph Peper, Karthik Krishnamurthy, Walter Talamonti, Kevin Leach, Yiping Kang, Walter Lasecki, Lingjia Tang, Jason Mars. 2022. One Agent To Rule Them All: Towards Multi-agent Conversational AI. Findings of the Association for Computational Linguistics: ACL 2022 ([PDF](#), [Code](#))

Yiping Kang, Ashish Mahendra, **Christopher Clarke**, Lingjia Tang, Jason Mars. 2022. Towards Personalized Intelligence at Scale. arXiv preprint 2022 ([PDF](#))

Stefan Larson, Anish Mahendran, Joseph J Peper, **Christopher Clarke**, Andrew Lee, Parker Hill, Jonathan K Kummerfeld, Kevin Leach, Michael A Laurenzano, Lingjia Tang, Jason Mars. 2019. An Evaluation Dataset for Intent Classification and Out-of-Scope Prediction. Conference on Empirical Methods in Natural Language Processing and the 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP), 1311–1316. ([PDF](#), [Code](#))

UNDER REVIEW

Roland Daynauth, **Christopher Clarke**, Krisztian Flautner, Lingjia Tang, Jason Mars. 2024. SLMEval: Leveraging Maximum Entropy Principles for Fair and Accurate Evaluation of Large Language Models. Under review

Roland Daynauth, **Christopher Clarke**, Krisztian Flautner, Lingjia Tang, Jason Mars. 2024. Elo Unraveled: Rethinking LLM Rankings in Head-to-Head AI Combat. Under review

Jason Mars, Yiping Kang, Jayanaka L. Dantanarayana, Chandra Irugalbandara, Kugesan Sivasothyathan, **Christopher Clarke**, Baichuan Li, Lingjia Tang. 2024. Meaning-Typed Programming: Language-level Abstractions and Runtime for GenAI Applications. 2024. Under review

PATENTS

Andrew Lee, Stefan Larson, **Christopher Clarke**, Kevin Leach, Jonathan K Kummerfeld, Parker Hill, Johann Hauswald, Michael A Laurenzano, Lingjia Tang, Jason Mars. 2020. Systems and methods for constructing an artificially diverse corpus of training data samples for training a contextually-biased model for a machine learning-based dialogue system. US Patent 10,796,104, 2020

Awards, Fellowships, & Grants

- 2022 **Weinberg Institute for Cognitive Science Travel Award**, University of Michigan
- 2022 **William R. & Flora Hewlett Foundation Award**, University of Michigan
- 2017 **Seeds for the Future Programme Award Recipient**, Huawei
- 2015 **Promoting CSME through Field Promotion Award Recipient**, Caricom

Presentations

* *presenting author*; + *mentored undergraduate*

INVITED TALKS

Fall 2024. *Gen AI Research: Challenges and New Frontiers*. Department of Computing, Information and Mathematical Sciences, and Technology (CIMST), Chicago State University

Winter 2024. *Towards Enhanced Human-AI Interaction: A Holistic Approach to Personalization in Natural Language Processing*. Department of Computing, Information and Mathematical Sciences, and Technology (CIMST), Chicago State University

Fall 2023. *Building Bridges in CSE PhD Studies*. NSBE student group, Wayne State University

Winter 2023. *Conversational AI Research: Challenges and New Frontiers*. EECS 449 Conversational AI, University of Michigan

Summer 2020. *DevOps Automation with Gitlab*. V75 Dev Talk, Remote ([Video](#), [Slides](#)).

Spring 2018. *A Sentient Approach to Designing Smart Devices*. 2nd Annual Undergraduate Research Conference, Turkeyen, Guyana

CONTRIBUTED PRESENTATIONS

Timothy Indarsingh**, Girendra Persaud, **Christopher Clarke**. 2018. A Comparative Analysis of the Usability of Event Management Software Interfaces. Poster: 2nd Annual Undergraduate Research Conference, Turkeyen, Guyana

Teaching Experience

Fall 2024	EECS 449: Conversational AI , Graduate Student Instructor	University of Michigan
Winter 2023	EECS 449: Conversational AI , Graduate Student Instructor	University of Michigan
Fall 2021	EECS 498: Conversational AI , Graduate Student Instructor	University of Michigan
Summer 2018	CSE 1201: Introduction to Programming , Lecturer	University of Guyana
Spring 2018	CSE 3203: Object Oriented Software Analysis, Design and Development , Lecturer	University of Guyana
Spring 2018	CSE 2200: Contemporary Programming Paradigms , Co-Instructor	University of Guyana
Fall 2017	ITE 4102: Applied Project , Co-Instructor	University of Guyana
Fall 2017	CSE 3101: Internet Computing II , Lecturer	University of Guyana
Fall 2017	CSE 2201: Internet Computing I , Lecturer	University of Guyana
Fall 2017	CSE 2100: Data Structure & Algorithms , Lecturer	University of Guyana
2016-2017	V75 Web Developer Series , Course Co-ordinator & Instructor	WeOwn Space

Mentoring

2024-Present **Braden Loughnane**, University of Michigan Alumni

2022-2023 **Yuhzao (Stefan) Heng**, Undergrad, University of Michigan (Now @GeorgiaTech)

2021-2022 **Victoria Shipman**, Explore CS Research Programme, University of Michigan

2021-2022 **Tamariah Davis**, Explore CS Research Programme, University of Michigan

2017-2018 **Timothy Indarsingh**, Undergrad Advisee, University of Guyana

Outreach & Professional Development

SERVICE AND OUTREACH

- 2021-Present **Explore Computer Science Research**, Mentor
- 2017-Present **Nexus Hub Inc. Annual Hack-Solve**, Co-ordinator
- 2014-2017 **University of Guyana Career Day**, Volunteer, Co-ordinator
- 2017 **DevX Event**, Co-ordinator

*University of
Michigan
Georgetown,
Guyana
Georgetown,
Guyana
Georgetown,
Guyana*

DEVELOPMENT

- MIT 15.390.1x: Entrepreneurship 101: Who is your customer?**, 2015.
- The Entrepreneurs & Innovators Group of Guyana: Entrepreneurship & Innovators Workshop**, 2015
- Caricom CSME in the classroom: Improving Teaching & Learning**, 2015
- HarvardX: GSE2x Leaders of Learning**, 2014.

PEER REVIEW

- International Symposium on Code Generation and Optimization (CGO)**, Artifact
Evaluation Committee 2020
- IEEE International Symposium on Performance Analysis of Systems and Software
(ISPASS)**, Reviewer 2020
- Empirical Methods in Natural Language Processing (EMNLP)**, Reviewer 2021 - 2024
- Association of Computational Linguistics (ACL) Rolling Review**, Reviewer 2022 - 2024
- Neural Information Processing Systems (NeurIPS)**, Reviewer 2022 - 2024